

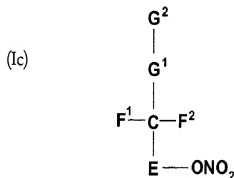
and which may contain inorganic counterions, but is not a nitrate group; E is a methylene group and  $G^1$  is a methylene group or does not exist;  $F^1$  is H; and  $G^2$  is  $R^N \cdot Z^N$ ,

wherein  $R^N$  is an organic radical possessing a heteroaryl group containing P or S atoms where said P or S are positioned  $\beta$ ,  $\gamma$ , or  $\delta$  to a nitrate group as identified in formula Ia; and  $Z^N$  is  $W^N_{mm} \cdot X^N_{nn} \cdot Y^N_{oo}$ ;

wherein mm, nn, oo are 0 or 1 and  $W^N, X^N, Y^N$  are NH,  $NR^{NN}$ , CO, O or  $CH_2$ ;

wherein  $R^{NN}$  is a  $C_1 - C_{12}$  alkyl group.

13. (Twice amended) A method for providing sedation, mitigating anxiety or providing anaesthesia in a subject in need thereof, comprising administering to a subject an effective amount of a therapeutic compound, wherein the therapeutic compound is of the formula (Ic):



in which E is  $(R^1R^2C)_m$  and  $G^2-G^1-CF^1F^2$  is  $R^{19}-(R^3R^4C)_p-(R^{17}R^{18}C)_n$ ;

wherein: m, n, p are integers from 0 to 10;

$R^{3,17}$  are each independently hydrogen, a nitrate group, or A; and

$R^{1,4}$  are each independently hydrogen, or A;

where A is selected from a substituted or unsubstituted aliphatic group comprising a branched or straight-chain aliphatic moiety having from 1 to 24 carbon atoms in the chain, which optionally may contain O, S,  $NR^6$  and unsaturations in the chain, optionally bearing from 1 to 4 hydroxy, nitrate, amino, aryl, or heterocyclic groups; an unsubstituted or substituted cyclic aliphatic moiety having from 3 to 7 carbon atoms in the aliphatic ring, which optionally may contain O, S,  $NR^6$  and unsaturations in the ring, optionally bearing from 1 to 4 hydroxy, nitrate, amino, aryl, or heterocyclic groups; an unsubstituted or substituted aliphatic moiety constituting a linkage of from 0 to 5 carbons, between  $R^1$  and  $R^3$  and/or between  $R^{17}$  and  $R^4$ , which optionally may contain O, S,  $NR^6$  and unsaturations in the linkage, and optionally bearing from 1 to 4 hydroxy, nitrate, amino, aryl, or heterocyclic groups; a substituted or unsubstituted aliphatic group comprising a branched,

cyclic or straight-chain aliphatic moiety having from 1 to 24 carbon atoms in the chain, containing carbonyl linkages selected from the group consisting of C=O, C=S, and C=NOH, which optionally may contain O, S, NR<sup>6</sup> and unsaturations in the chain, optionally bearing from 1 to 4 hydroxy, nitrate, amino, aryl, or heterocyclic groups; a substituted or unsubstituted aryl group; a heterocyclic group; an amino group selected from alkylamino, dialkylamino, cyclic amino, diamino and triamino moieties, arylamino, diarylamino, and alkylarylamino; hydroxy; alkoxy; a substituted or unsubstituted aryloxy;

wherein X is F, Br, Cl, NO<sub>2</sub>, CH<sub>3</sub>, CF<sub>3</sub>, O, NH, NMe, CN, NHOH, N<sub>2</sub>H<sub>3</sub>, N<sub>2</sub>H<sub>2</sub>R<sup>13</sup>, N<sub>2</sub>HR<sup>13</sup>R<sup>14</sup>, N<sub>3</sub>, S, SCN, SCN<sub>2</sub>H<sub>2</sub>(R<sup>15</sup>)<sub>2</sub>, SCN<sub>2</sub>H<sub>3</sub>(R<sup>15</sup>), SC(O)N(R<sup>15</sup>)<sub>2</sub>, SC(O)NHR<sup>15</sup>, SO<sub>3</sub>M, SH, SR<sup>7</sup>, SO<sub>2</sub>M, S(O)R<sup>8</sup>, S(O)<sub>2</sub>R<sup>9</sup>, S(O)OR<sup>8</sup>, S(O)<sub>2</sub>OR<sup>9</sup>, PO<sub>2</sub>HM, PO<sub>3</sub>HM, PO<sub>3</sub>M, P(O)(OR<sup>15</sup>)(OR<sup>16</sup>), P(O)(OR<sup>16</sup>)(OM), P(O)(R<sup>15</sup>)(OR<sup>8</sup>), P(O)(OM)R<sup>15</sup>, CO<sub>2</sub>M, CO<sub>2</sub>H, CO<sub>2</sub>R<sup>11</sup>, C(O), C(O)R<sup>12</sup>, C(O)(OR<sup>13</sup>), PO<sub>2</sub>H, PO<sub>2</sub>M, P(O)(OR<sup>14</sup>), P(O)(R<sup>13</sup>), SO, SO<sub>2</sub>, C(O)(SR<sup>13</sup>), SR<sup>5</sup>, SSR<sup>7</sup> or SSR<sup>5</sup>;

Y is F, Br, Cl, CH<sub>3</sub>, CF<sub>3</sub>, OH, NH<sub>2</sub>, NHR<sup>6</sup>, NR<sup>6</sup>R<sup>7</sup>, CN, NHOH, N<sub>2</sub>H<sub>3</sub>, N<sub>2</sub>H<sub>2</sub>R<sup>13</sup>, N<sub>2</sub>HR<sup>13</sup>R<sup>14</sup>, N<sub>3</sub>, S, SCN, SCN<sub>2</sub>H<sub>2</sub>(R<sup>15</sup>)<sub>2</sub>, SCN<sub>2</sub>H<sub>3</sub>(R<sup>15</sup>), SC(O)N(R<sup>15</sup>)<sub>2</sub>, SC(O)NHR<sup>15</sup>, SO<sub>3</sub>M, SH, SR<sup>7</sup>, SO<sub>2</sub>M, S(O)R<sup>8</sup>, S(O)<sub>2</sub>R<sup>9</sup>, S(O)OR<sup>8</sup>, S(O)<sub>2</sub>OR<sup>9</sup>, PO<sub>2</sub>HM, PO<sub>3</sub>M<sub>2</sub>, P(O)(OR<sup>15</sup>)(OR<sup>16</sup>), P(O)(OR<sup>16</sup>)(OM), P(O)(R<sup>15</sup>)(OR<sup>8</sup>), P(O)(OM)R<sup>15</sup>, CO<sub>2</sub>M, CO<sub>2</sub>H, CO<sub>2</sub>R<sup>11</sup>, C(O)R<sup>12</sup>, C(O)(OR<sup>13</sup>), C(O)(SR<sup>13</sup>), SR<sup>5</sup>, SSR<sup>7</sup> or SSR<sup>5</sup>, or does not exist;

R<sup>2</sup>, R<sup>5</sup>, R<sup>18</sup>, R<sup>19</sup> are optionally hydrogen, A or X-Y;

R<sup>6</sup>, R<sup>7</sup>, R<sup>8</sup>, R<sup>9</sup>, R<sup>11</sup>, R<sup>12</sup>, R<sup>13</sup>, R<sup>14</sup>, R<sup>15</sup>, R<sup>16</sup> are the same or different alkyl or acyl groups containing 1-24 carbon atoms which may contain 1-4 ONO<sub>2</sub> substituents; or C<sub>1</sub> - C<sub>6</sub> connections to R<sup>1</sup> - R<sup>4</sup> in cyclic derivatives which may contain 1-4 ONO<sub>2</sub> substituents; or are each independently hydrogen, a nitrate group or A;

M is H, Na<sup>+</sup>, K<sup>+</sup>, NH<sub>4</sub><sup>+</sup>, N<sup>+</sup>H<sub>k</sub>R<sup>11</sup>(<sub>4-k</sub>) where k is 0-3; or other pharmaceutically acceptable counterion;

and with the proviso that when m = n = p = 1 and R<sup>19</sup>, R<sup>2</sup>, R<sup>18</sup>, R<sup>1</sup> = H and R<sup>17</sup>, R<sup>3</sup> are nitrate groups, R<sup>4</sup> is not H.

14. (Twice amended) The method of claim 11, wherein F<sup>2</sup> is a nitrate group; and E, F<sup>1</sup>, G<sup>1</sup>, G<sup>2</sup> are the same or different organic radicals which may be joined in cyclic ring systems, and which may contain inorganic counterions;

with the proviso that when E and G<sup>1</sup> are methylene groups and F<sup>1</sup> is H, G<sup>2</sup> is not a nitrate group, nor R<sup>N</sup>-Z<sup>N</sup>;

wherein  $R^N$  is any aryl or heteroaryl group and  $Z^N$  is  $(CO)_{mm}-X^N_{nn}-Y^N_{oo}$ ;  
wherein mm, nn, oo are 0 or 1 and  $X^N, Y^N$  are  $NH$ ,  $NR^{NN}$ , O or  $CH_2$ ;  
wherein  $R^{NN}$  is a  $C_1 - C_{12}$  alkyl group.

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15. (Amended) The method of claim 11, wherein  $F^2$  is a nitrate group; E and  $G^1$  are methylene groups;  $F^1$  is  $H$ ; and  $G^2$  is  $R^N-Z^N$ ;  
wherein  $R^N$  is an organic radical possessing an heteroaryl group containing P or S atoms where said P or S are positioned  $\beta$ ,  $\gamma$ , or  $\delta$  to a nitrate group as identified in formula Ia; and  $Z^N$  is  $W^N_{mm}-X^N_{nn}-Y^N_{oo}$ ;  
wherein mm, nn, oo are 0 or 1 and  $W^N, X^N, Y^N$  are  $NH$ ,  $NR^{NN}$ , CO, O or  $CH_2$ ;  
wherein  $R^{NN}$  is a  $C_1 - C_{12}$  alkyl group.

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24. (Amended) The method of any one of claims 11, 13, 14 or 15, further comprising administering the therapeutic compound with a pharmaceutically acceptable vehicle.

10<sup>4</sup>

26. (Amended) The method of any one of claims 11, 13, 14 or 15, wherein the therapeutic compound modulates levels of the cyclic nucleotides cGMP and/or cAMP in said subject.

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28. (Amended) The method of any one of claims 11, 13, 14 or 15, wherein the therapeutic compound modulates guanylyl cyclase activity in said subject.

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41. (Amended) The method of claim 13, wherein when E and  $G^1$  are independently methylene groups or do not exist and  $F^1$  is  $H$ ,  $G^2$  is not  $R^N-Z^N$ ;  
wherein  $R^N$  is any aryl or heteroaryl group and  $Z^N$  is  $(CO)_{mm}-X^N_{nn}-Y^N_{oo}$ ;  
wherein mm, nn, oo are 0 or 1 and  $X^N, Y^N$  are  $NH$ ,  $NR^{NN}$ , O or  $CH_2$ ;  
wherein  $R^{NN}$  is a  $C_1 - C_{12}$  alkyl group.

42. (Amended) The method of claim 41, wherein  $F^2$  is a nitrate group; and E,  $F^1$ ,  $G^1$ ,  $G^2$  are the same or different organic radicals which may be joined in cyclic ring systems, and which may contain inorganic counterions;  
with the proviso that when E and  $G^1$  are methylene groups and  $F^1$  is  $H$ ,  $G^2$  is not a nitrate group, nor  $R^N-Z^N$ ;